10/562384

EV764490411US

DOCKET: CU-4616

IAP5 Rec'd PCT/PTO 27 DEC 2005

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

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TITLE: CONTAINER, FROZEN MATERIAL PACKAGING BODY, AND METHOD OF MANUFACTURING PACKAGING BODY

COMPLETION OF PCT/JP2004/009171 filed 30 June 2004

ENGLISH TRANSLATION OF ANNEXES TO INTERNATIONAL PRELIMINARY EXAMINATION REPORT

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Amendment under PCT Art. 34(2)(b)

~~[0042] (Paragraph 0042 is Deleted in its entirety)~~

Amendment under PCT Art. 34(2)(b)

[0059]

[Table 3]

Filled Amount	400ml (20%of Container Volume	1000ml (50%of Container Volume	1500ml (75%of Container Volume	2000ml (100%of Container Volume
Example 1	Not Expand	Not Expand	Not Expand	Not Expand
Comparative Example 1	Without substantive Expansion	Expand	Expand	Expand

As known from Table 3, in the frozen material packaging bodies using the containers according to Embodiment 1 of the present invention, regardless of the filled amount of the frozen material (even though it is filled 100%), the containers did not expand. Meanwhile, in the frozen material packaging bodies using the containers of Comparative Example 1, although a large expansion has not been observed, it was impossible to prevent the container from expanding when the frozen material was filled more. Namely, in the present invention, it is possible to preferably enjoy the advantages of the present invention when the filled amount of the frozen material exceeds 20% of the container volume (preferably 50% or more).

(Comparative Example 3)

The paper container according to Comparative Example 3 is prepared. A layer structure of its container body is in an order of polyethylene/paper/ polyethylene from the outside of the container. The other portions are similar to those of the paper container of Example 1.

Amendment under PCT Art. 34(2)(b)

[0060] Test 4

A laminated body (with aluminum foil layer) used for a body of the container according to Example 1 and a laminated body (without aluminum foil layer) used for a body of the container according to Comparative Example 3 of the present invention are prepared to measure their tearing strength and burst strength.

Amendment under PCT Art. 34(2)(b)

[0062]

[Table 4]

	Tearing Strength in Longitudinal Direction (mN)	Tearing Strength in Lateral Direction (mN)
Example 1	525	Impossible to tear down
Comparative Example 3	447	450

[0063]

[Table 5]

	Burst Strength in Longitudinal Direction (Pa)
Example 1	1091
Comparative Example 3	771

As known from Tables 4 and 5, the laminated bodies used in Example 1 of the present invention are excellent with respect to both of the tearing strength and the burst strength in comparison with that of Comparative Example 3. This result is considered to depend on whether or not the aluminum foil layer exists in the laminated body. Namely, it is preferable that an aluminum foil layer exists in the container according to the present invention as described in reference of Figure 2. Further, the laminated body used in Example 1 has polyethylene terephthalate laminated in addition to the aluminum foil layer. Such the laminated body is superior to that of Comparative Example 3 because of a synergistic effect between an aluminum foil layer and polyethylene terephthalate.

Amendment under PCT Art. 34(2)(b)

[0065] Test 5

A laminated body (with aluminum foil layer) used for a body of the container according to Example 1 and a laminated body (without aluminum foil layer) used for a body of the container according to of Comparative Example 3 of the present invention are prepared to measure their oxygen permeability and moisture permeability.

Amendment under PCT Art. 34(2)(b)

[0067]

[Table 6]

	Oxygen Permeability ($ml/m^2 \cdot day \cdot MPa$)	Moisture Permeability ($ml/m^2 \cdot day \cdot MPa$)
Example 1	0	0
Comparative Example 3	14805 to 29610	6

As known from Table 6, the laminated body used for the container body of Example 1 of the present invention is superior in both of oxygen permeability and moisture permeability to the container according to Comparative Example 3. This reason seems to reside in a difference of whether or not the aluminum foil layer exists inside the laminated body in a similar manner to Test 4 described above. Accordingly, in the container of the present invention formed in use of the laminated body having the aluminum foil layer, it is possible to completely shut down transmission of oxygen between the outside and the inside in the main body of the container except for the vent port.

Amendment under PCT Art. 34(2)(b)

[0068]

Embodiment 2

A laminated body according to Example 1 and a laminated body according to Comparative Example 3 of the present invention are prepared. Pellets obtained by freezing bifidobacteria which are cultivated in a culture media of milk (10% skimmed milk solution and 1% yeast extract) are filled in the containers. Thereafter, while maintaining the containers sealed, the pellets obtained by freezing bifidobacteria are dissolved and fermented at a temperature of 37 Celsius degree. The pH changes of thus obtained dissolved liquid inside the containers are measured.

Amendment under PCT Art. 34(2)(b)

[0070]

[Table 7]

	0 hr	2 hr	3 hr	4 r	5 hr	6 hr	7 hr	8 hr
Example 1	6.20	6.14	6.07	5.91	5.62	5.29	4.96	4.71
Compa-rative Example 3	6.20	6.20	6.19	6.14	6.03	5.82	5.47	5.11

As known from Table 7, the pH of the dissolved liquid inside the container according to the present invention has a lower drop rate in comparison with that of Comparative Example 3. This means fermentation by bifidobacteria runs faster. Accordingly, there is a stronger effect of enhancing fermentation of contents by anaerobe such as bifidobacteria in the container according to Example 1(i.e. container having an aluminum foil layer in its laminated body) than in the container according to Comparative Example 3.

Amendment under PCT Art. 34(2)(b)

CLAIMS:

1. A frozen material packaging body comprising:

a container formed using a laminated body including at least a thin layer of paper and a thin layer of aluminum; and

a vent port covered with an air-permeable filter material, made from an unwoven paper having microbial impermeability and air permeability of a range of 5 to 10000 sec/100 cc under JIS-P8117 (Gurley method), and formed at least in a portion the container; and

frozen culture filled in the container.

2. A frozen material packaging body according to Claim 1, wherein

the frozen culture is frozen pellets of bifidobacteria.

3. A method of manufacturing a frozen material packaging body comprising:

a step of forming a pellet-like frozen culture by dropping a culture that is incubated in a liquid medium through liquid nitrogen along with the liquid medium;

a step of filling the pellet-like frozen culture in a a container formed using a laminated body including at least a thin layer of paper and a thin layer of aluminum and having, at least in a portion the container, a vent port covered with an air-permeable filter material, made from an unwoven paper having microbial impermeability and air permeability of a range

of 5 to 10000 sec/100 cc under JIS-P8117(Gurley method); and

a step of hermetically sealing the container thus filled.

4. A method of freezing and fermenting a culture comprising:

a step of forming a pellet-like frozen culture by dropping the culture, incubated in a liquid medium, through liquid nitrogen along with the liquid medium;

a step of filling the pellet-like frozen culture in a a container formed using a laminated body including at least a thin layer of paper and a thin layer of aluminum and having, at least in a portion the container, a vent port covered with an air-permeable filter material, made from an unwoven paper having microbial impermeability and air permeability of a range of 5 to 10000 sec/100 cc under JIS-P8117(Gurley method);

a step of hermetically sealing the container thus filled;

a step of heating the frozen material packaging body thus sealed in an unopened state to melt the frozen culture; and

a step of successively fermenting the frozen culture.

5. A method of freezing and fermenting the culture according to Claim 4, wherein:

the liquid medium is milk;

the frozen culture is frozen pellets of bifidobacteria; and

the fermentative temperature is 37 Celsius degree.